



CORNELIUS INC

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Installation Manual

“I” Series 224

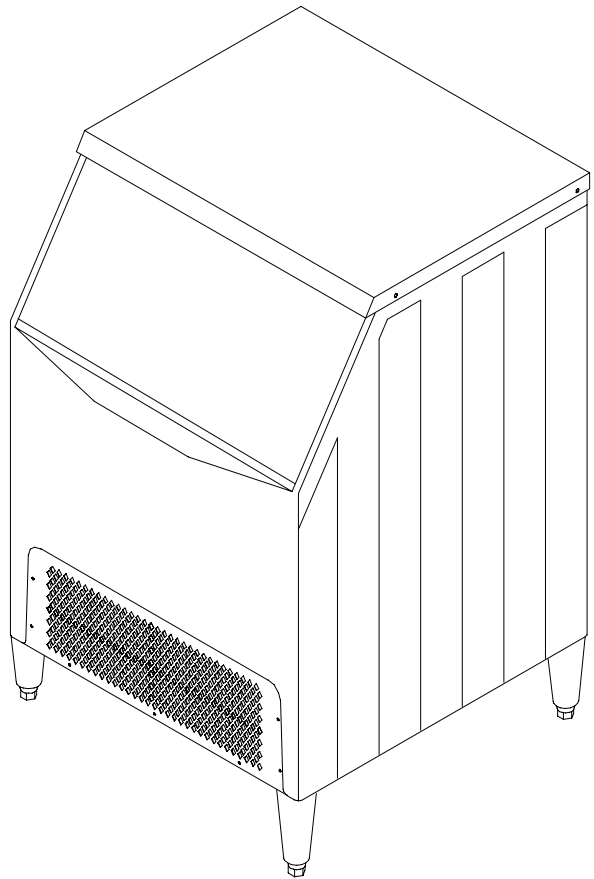
Ice Cube Machine

IMPORTANT:

TO THE INSTALLER.

It is the responsibility of the Installer to ensure that the water supply to the dispensing equipment is provided with protection against backflow by an air gap as defined in ANSI/ASME A112.1.2-1979; or an approved vacuum breaker or other such method as proved effective by test.

Water pipe connections and fixtures directly connected to a potable water supply shall be sized, installed, and maintained according to Federal, State, and Local Codes.



Part No. 630460070INS
Revised: May 07, 2014
Revision: B

THIS DOCUMENT CONTAINS IMPORTANT INFORMATION

This Manual must be read and understood before installing or operating this equipment

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SAFETY INFORMATION

Recognize Safety Information

This is the safety-alert symbol. When you see this symbol on our machine or in this manual, be alert to the potentially of personal injury.

Follow recommended precautions and safe operating practices.



Understand Signal Words

A signal word - **DANGER**, **WARNING**, OR **CAUTION** is used with the safety-alert symbol. **DANGER** identifies the most serious hazards.

Safety signs with signal word **DANGER** or **WARNING** are typically near specific hazards.

General precautions are listed on **CAUTION** safety signs. **CAUTION** also calls attention to safety messages in this manual.



Follow Safety Instructions

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. Learn how to operate the machine and how to use the controls properly. Do not let anyone operate the machine without instructions. Keep your machine in proper working condition. Unauthorized modifications to the machine may impair function and/or safety and affect the machine life.

CO₂ (Carbon Dioxide) Warning

CO₂ Displaces Oxygen. Strict Attention *must* be observed in the prevention of CO₂ (carbon dioxide) gas leaks in the entire CO₂ and soft drink system. If a CO₂ gas leak is suspected, particularly in a small area, *immediately* ventilate the contaminated area before attempting to repair the leak. Personnel exposed to high concentration of CO₂ gas will experience tremors which are followed rapidly by loss of consciousness and suffocation.

Shipping, Storing, Or Relocating Unit

CAUTION: Before shipping, storing, or relocating this Unit, the syrup systems must be sanitized and all sanitizing solution *must* be purged from the syrup systems. All water *must* also be purged from the plain and carbonated water systems. A freezing ambient temperature will cause residual water remaining inside the Unit to freeze resulting in damage to internal components of the Unit.

GENERAL DESCRIPTION

This section gives the Unit description, theory of operation, and design data for

IMPORTANT: *To the user of this manual* – This manual is a guide for installing, operating, and maintaining this equipment. Refer to the Table of Contents for page location for detailed information pertaining to questions that arise during installation, operation, service, or maintenance of this equipment.

FREIGHT DAMAGE CLAIMS PROCEDURE

The deliver of your equipment (freight company, distributor, or dealer) is responsible for loss or damage of your shipment. All claims must be filed with the deliverer of your equipment. Please follow the steps below to determine if your shipment is satisfactory or if a claim must be filed.

1. Check the number of products delivered against the number of products listed on the delivery receipt. Should the totals not match, have the driver note all error on both copies and both you and the driver sign and attach said notation.
2. Inspect all cartons for visible damage. Open and inspect as required before the driver leaves and have him or her note any damage on the receipts. All damaged claims must be inspected within 15 days of delivery. Notify your carrier immediately if concealed damage is found after delivery.
3. Should concealed damage be found when product is unpacked, retain the packing material and the product and request an inspection from the deliverer.
4. All claims for loss or damage should be filed at once. Delays in filing will reduce the chance of achieving a satisfactory resolution to the claim.

SPECIFICATIONS, ICE CUBER

The following table contains equipment specification information for the Ice Cubers.

MODEL	IACS224	IACS224E50	IWCS224	IWCS224E50
UNIT				
Volts	115	220	115	220
Phase	1	1	1	1
Hertz	60	50	60	50
No. Wires	2+Ground	2+Ground	2+Ground	2+Ground
MIN. CIRCUIT MAX FUSE SIZE (HVAC CIRCUIT BREAKER REQUIRED)				
Amps	20	15	20	15
MAX FUSE SIZE (HVAC CIRCUIT BREAKER REQUIRED)				
Amps	20	15		15
REFRIGERANT				
Type	R404A(HP62)	R404A(HP62)	R404A(HP62)	R404A(HP62)
Weight (oz)	13	13	13	13
Weight (g)	369	369	369	369
COMPRESSOR				
Volts	115	220	115	220
Phase	1	1	1	1
Hertz	60	57	60	57
LRA	37.2	16.1	37.2	16.1
RLA	7.1	2.8	7.1	2.8
CONDENSER FAN MOTOR (Air-Cooled Systems only) or AIR CIRCULATION FAN MOTOR (Water-Cooled and Remote Systems only)				
Volts	115	220	115	220
Phase	1	1	1	1
Hertz	60	50	60	50
Amps Running	1.4	1.4	.36	.17
Watts	35	35	6	5
WATER PUMP				
Volts	115	220	115	220
Phase	1	1	1	1
Hertz	60	50	60	50
Amps Running	.89	.45	.89	.45
HP	1/60	1/50	1/60	1/50

INSTALLATION

This section covers unpacking and inspection, selecting location, installing Unit, preparing for operation, and operation. Installation and start-up of the equipment should be performed by the distributor or the dealer's professional staff.

LOCATION OF EQUIPMENT

For maximum performance the location should be away from heat sources such as ovens, direct sunlight, hot air discharge, etc.

To reduce cost of maintenance and loss of efficiency, avoid placing air-cooled equipment in areas where grease, flour and other airborne contaminants are present. Allow a minimum of 6" (15.24 cm) clearance at the front for proper air circulation. Restricted air circulation will affect the efficiency and required maintenance of the product.

IMPORTANT: Never operate your equipment in room temperature below 50°F (10 °C) OR ABOVE 100°F(38°C). Should the location of your product ever be exposed to freezing temperatures, it must be shut down and winterized.

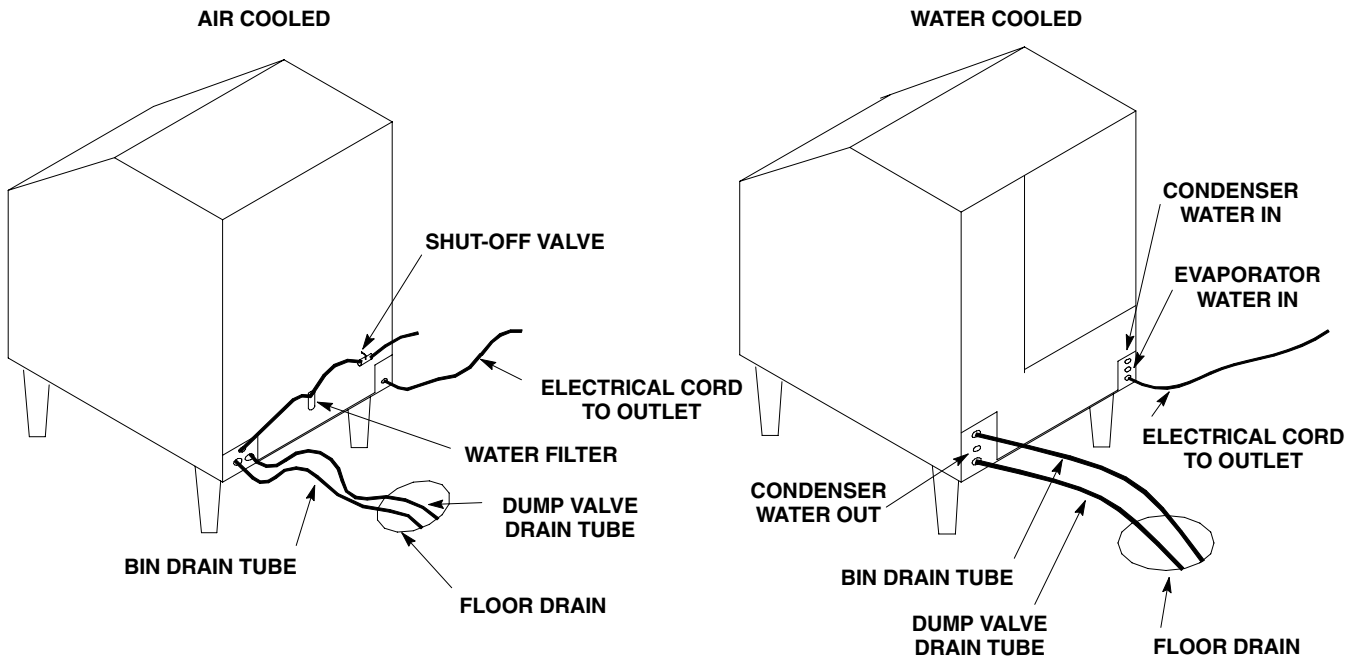
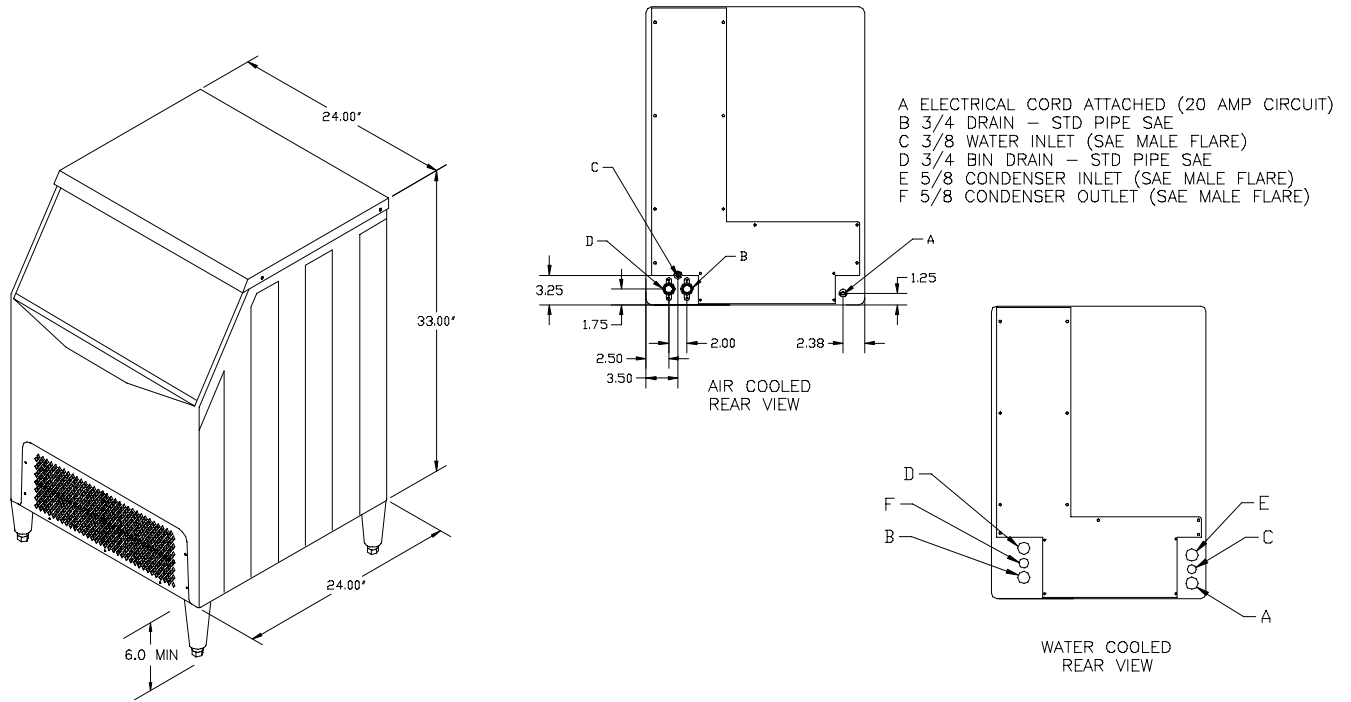


FIGURE 1. INSTALLATION

PLUMBING CONNECTIONS

1. All plumbing lines and connections must conform to local and national plumbing codes.
2. Line shut-off valves must be located in supply water lines for cuber and condenser if product is water-cooled. Water supply to water-cooled condenser must include a stand-pipe to prevent "water hammer".
3. Should your local water supply quality require the installation of a water filter system, consult your local distributor or dealer for proper size required.
4. Water supply pressure must not be lower the **20 PSI (1.37 BAR)**, nor should it exceed **120 PSI (8.16 BAR)**.

IMPORTANT: water filters larger than 5 microns do not give proper protection. Water pressures above 80 PSI (5.44 BAR) will destroy the filter.



INSTRUCTIONS FOR ATTACHING SUPPORT LEGS

1. LAY CABINET ON BACK OR SIDE USING BLANKET OR SIMILAR SOFT PADDING TO AVOID MARRING.
2. REMOVE CRATE SKID FROM UNIT BOTTOM.
3. SCREW ADJUSTABLE LEGS INTO RECESSED THREADS OF UNIT BASE.
4. LEVEL UNIT USING FEET FOR ADJUSTMENT.

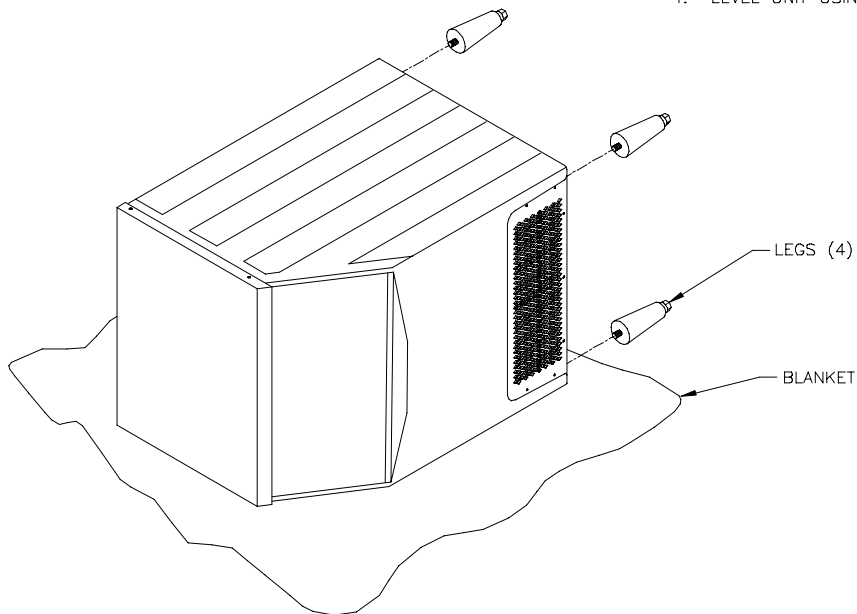


FIGURE 2. CUBER INSTALLATION

ELECTRICAL

1. All wiring and connections must conform to national and local electrical codes.
2. Wire size and circuit protection must conform to specifications and cuber must be on a separate electrical circuit.
3. Cuber must be grounded for the safety requirements.
4. A manual disconnect in a convenient location to the cuber must be installed.

INSTALLATION CHECK POINTS.

IMPORTANT: For the Ice Cube Machine to operate properly, the front and back panels **must** be in place on the machine. When the Ice Cube Machine is operated without the panels in place, airflow across the condenser coils is affected, causing pressure variations. These pressure variations can result in low or a failed ice harvest.

1. Has bin and cuber been leveled and sanitized?
2. Does electrical and plumbing meet code requirements?
3. Check correct operation water level in the water pan.
4. Are drain lines separate and vented?
5. Is there 6" clearance in the front of the machine for proper air circulation?
6. Does the ice harvest switch move freely, and does the float valve shut off incoming water to water pan?
7. Vigorously rub the stainless steel water plate(s), on top of the evaporator(s), with scotch-brite pad to remove any oxidation and improve the ability of the water to properly track across plain.

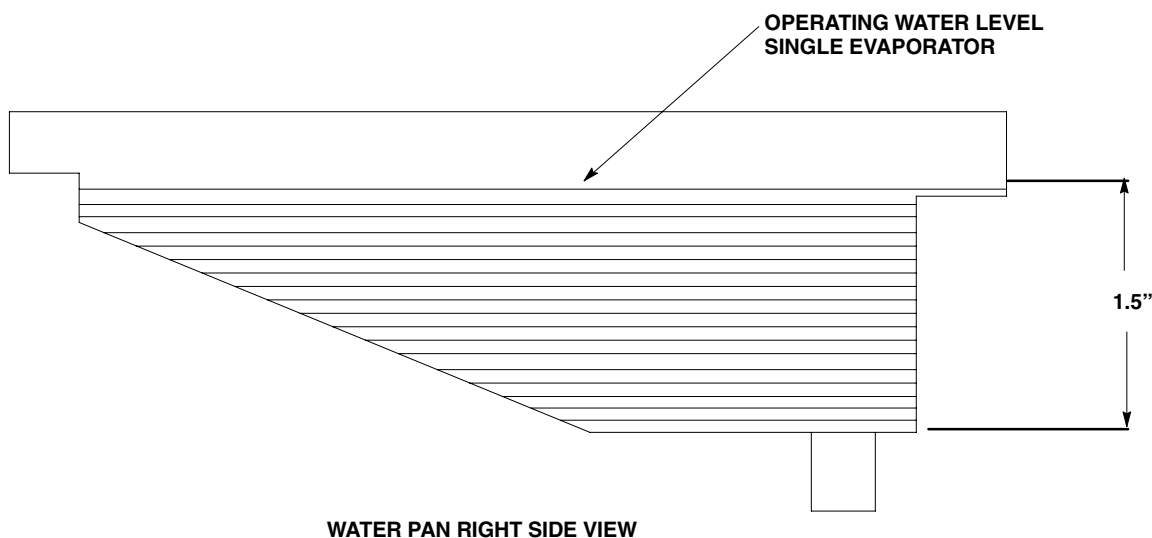


FIGURE 3. SINGLE EVAPORATOR WATER LEVEL

START-UP AND CHECK OUT

1. Turn the cuber's power switch to the clean (pump only) position. The water pump only should be operational. Check for an even, steady flow of water over the evaporator top extrusion and down over evaporator surface. Check that all ports of the water distribution tube are open for even water discharge. The water pan should refill and the float should stop the incoming water supply.
2. Place the cuber's power switch in **ON** position. After a 2 second delay the compressor will start. The condenser fan will operate when the condenser sensor signals the circuit board that its temperature is 100 (38° C). The water pump will operate when the evaporator cools to 25°F (3.9° C). Depress the manual harvest switch located on the circuit board. The fan motor will stop and the water dump valve will open. in 3 seconds the hot gas solenoid will open and 15 seconds after depressing the manual harvest switch, the water pump will stop and the dump valve will close terminating the dump cycle.
3. Hold the ice harvest switch open for a maximum of 30 seconds; the product should shut down. Release the ice harvest switch. When the switch closes, there will be a 2 second delay, and the compressor will start and the start-up process should begin for the next ice making mode.
4. If all product operation are as stated, allow product to operate and product one slab of ice, then discard the ice. Allow the product to continue operation to fill the storage bin.

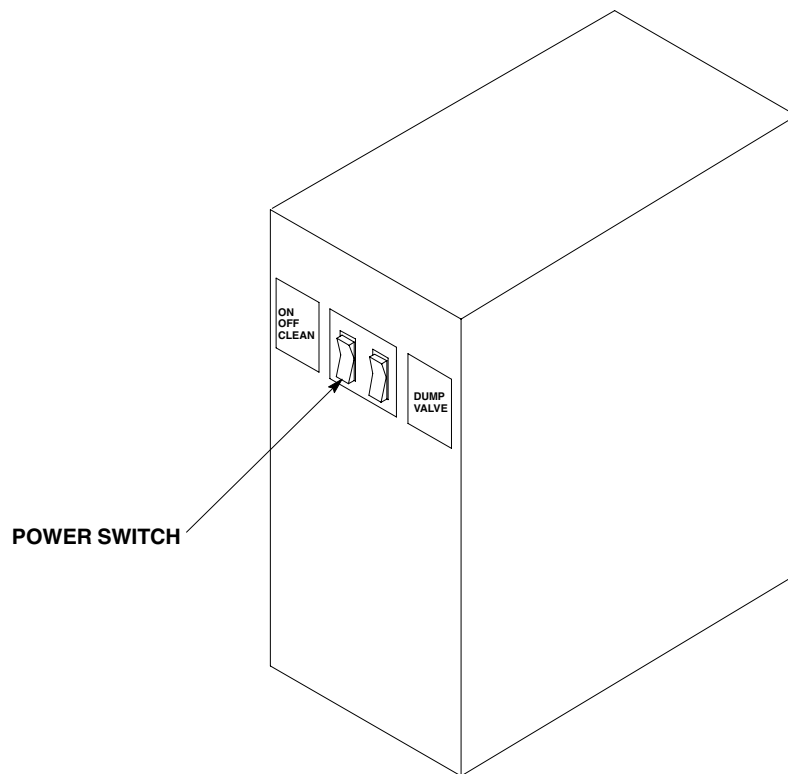


FIGURE 4. ELECTRICAL BOX SWITCH PANEL

OWNER-OPERATOR

The installation is not complete until you are sure the owner-operator understands the cuber operation and his or her responsibility of preventative maintenance.

Does the owner-operator know:

1. Location of electrical disconnect switch and water shut-off valves?
2. How to start and/or shut down the product, clean and sanitize it.?
3. Bin full operation and reset operation of high pressure cutout (water-cooled and remote products only.)?
4. How to clean the condenser and fan blade?
5. Whom to call for product information and/or service?

CLEANING PROCEDURES

Approved ice machine cleaners by brand names:

- Calgon Nickel Safe (green color only)

NOTE: Failure to use approved product will void the warranty.



CAUTION: Ice Machine cleaners are acidic-based chemicals. Before beginning any cleaning of the cuber, the ice in the storage bin or dispenser must be removed.



WARNING: When using any chemical rubber gloves and eye protection should be worn.

PREP-CLEANING

Use full-strength ice machine cleaner on a coarse-surface cloth material (such as terry cloth) and wipe down the inside wall of the evaporator area, the evaporator top. If the water distributor tube has heavy scale build-up, remove and soak in a full-strength ice machine clean (or exchange the tube and clean the scaled tube at a later date).

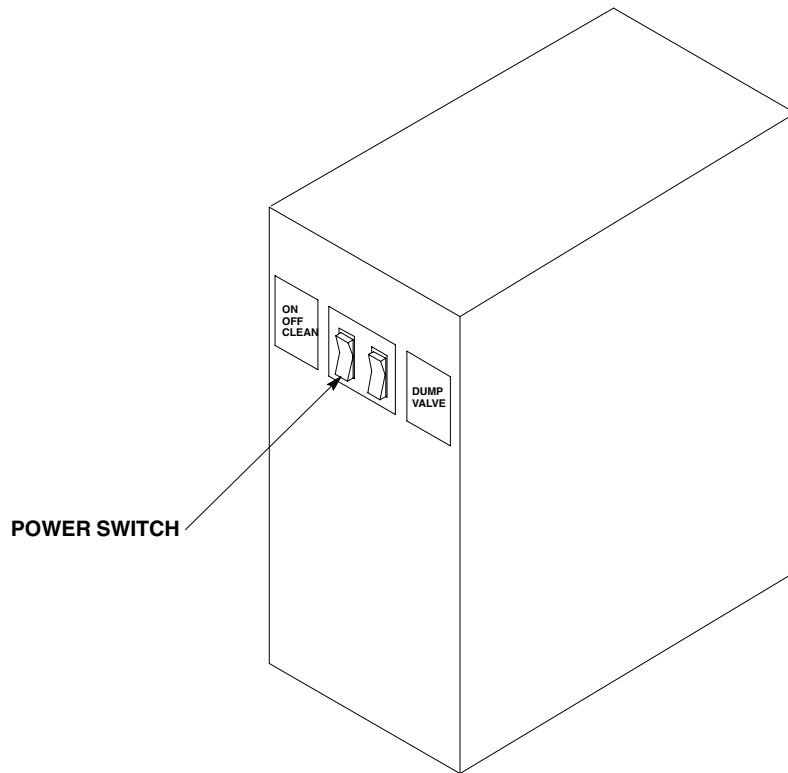
CLEANING THE WATER SYSTEM AND EVAPORATOR

1. Set the switch to **CLEAN** and allow the ice on the evaporator to release the melt away.
2. Remove all ice from the storage bin.
3. Add 3 oz. for a single evaporator of “Calgon Nickel-Safe” ice machine cleaner directly into the water pan. Set switch to **CLEAN**, circulate for a maximum of 15 minutes.
4. Depress and hold the dump switch to allow the cleaner to drain away.
5. Fill the water pan with clean fresh water, circulate for approximately 3 minute. Depress the **DUMP** switch and allow the water to drain away. Repeat this procedure 3 times.
6. After third rinse cycle, place product power switch in **ON** position. Allow product to produce one slab of ice—DISCARD THE ICE.

7. When clean cycle is complete, return cuber to normal operating mode.

NOTE: Please take note of the following:

- Ice machines should only be cleaned when needed, not by a timed schedule of every 60 days, etc.
- Should your ice machine require cleaning more than twice a year, consult your distributor or dealer about proper water treatment.



SANITIZING PROCEDURES

1. Add 1/4 ounce (7.08 g) sodium hypochlorite solution (common liquid laundry bleach) to the water pan and allow the pump to circulate the solution for 5 minutes. You may also use a commercial sanitizer such as Calgon Ice Machine Sanitizer following the directions on the product label.
2. Turn the product power switch off and depress the dump switch to drain the water pan.
3. To sanitize the bin and other surface areas, use 1 ounce of liquid bleach per gallon of water and wipe all areas with solution. Or use a commercial sanitizer.
4. Place the product power switch in the ice position. Discard the first batch of ice produced.
5. Cleaning and sanitizing are now complete, Product may be returned to normal service.

DUMP CYCLE

1. With the proper water level in the water pan, start the water pump to circulate the water. Check that the float will return water level to original setting and stop the inlet water.
2. There is flow washer in the inlet side of the float assembly that will control inlet water pressure from 50/120 PSI (3.4/8.16 Bars). This will prevent float flutter. In low water pressure conditions, 20 PSI (1.37 Bars) or less, the flow washer may have to be removed from the float assembly for proper fill volume.

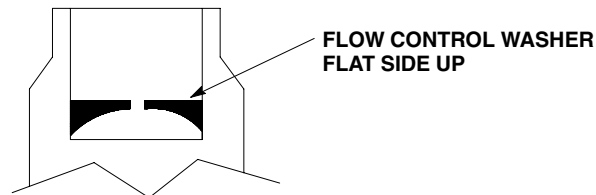
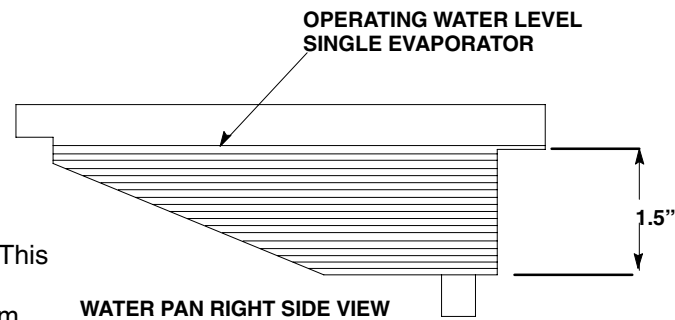


FIGURE 5. FLOW CONTROL WASHER

Push the manual **DUMP** switch - allow dump action to drain the water pan. When you release the momentary switch, the pump will stop and the float will return the water level back to its original setting and shut off the water supply.

3. You have the option of selecting dump cycle intervals of:
 - every cycle
 - every 3rd cycle
 - every 7th cycle

Remember: The higher the mineral content in the water supply the more often it will be required to dump the water and/or clean the product if proper water treatment is not used.

CIRCUIT BOARD SETTING

Figure 6 shows the setting of circuit board. There are dump cycle dip switch (S3) and curtain selection dip switch (SW4) in the circuit board. Even though no water curtain equipped in IACS224 and IWCs224, “single curtain connection” on SW4 need to be selected.

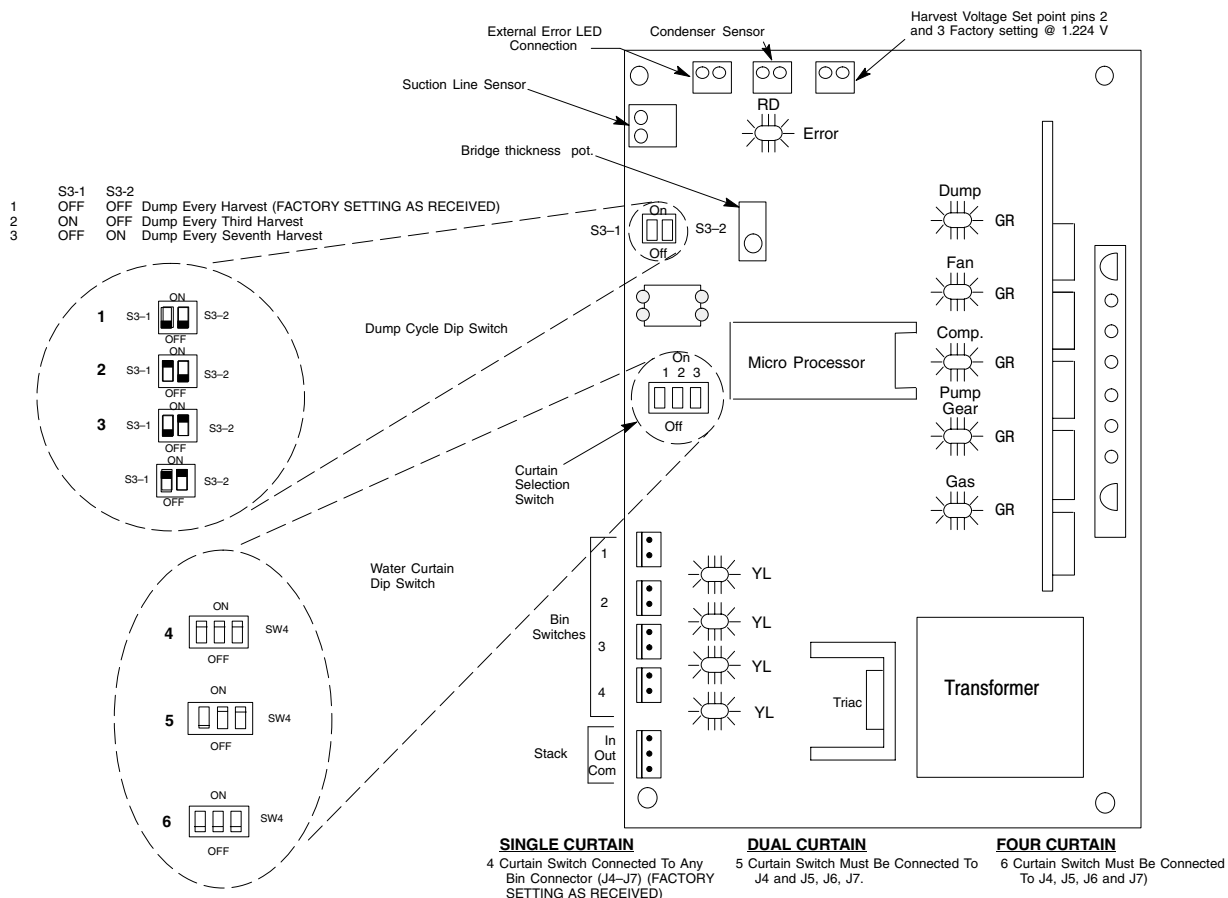


FIGURE 6. DUMP CYCLE OPTIONS

ADJUSTING BRIDGE THICKNESS

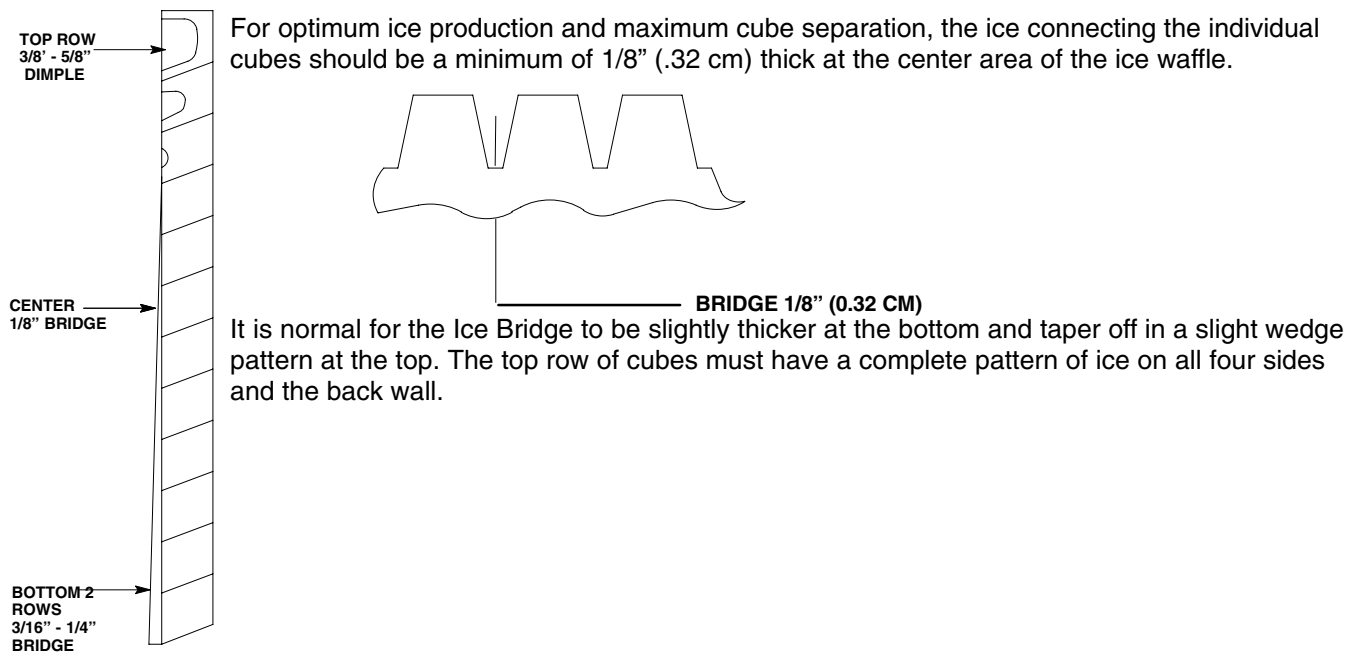


FIGURE 7. CUBE SEPARATION

REMEMBER: When you operate the product with the panels off during testing the additional heat at the top of the evaporator will cause thinner ice at the top than when the panels are in place. Should a different thickness of the bridge be desired, it will be required to adjust the ice thickness “POT”, located on the circuit board, as follows:

1. Thinner Bridge - Turn the ice thickness “pot” adjustment screw ↻ **CW** one full turn.. Allow two cycles before determining if additional adjustments are required.
2. Thicker Bridge - turn the ice thickness “pot” adjustment screw ↺ **CCW** on full turn. Allow two cycles before determining if additional adjustments are required.

NOTE: Never judge the thickness of the ice from the first batch of ice produced - the first cycle is a balance cycle. Always wait for the second cycle before making and adjustments.

HARVEST CONTROL

An ice harvest switch bar is used to control the harvest cycle. It is operated by the movement of the ice from evaporator. The momentary opening of the ice harvest switch terminates the ice machine’s harvest cycle.. As the ice harvest bar swings closed, the ice machine returns into the freezing cycle.

FULL BIN CONTROL

A bin thermostat is provided to control the level of the ice in the storage bin. When the storage bin is full, the bin thermostat tube equipped inside the storage bin will sense a low temperature which causes the bin thermostat to switch to it “close” position. The ice machine will complete the cycle and shut off.

The ice machine remains off until sufficient ice is removed from the storage bin allowing the bin thermostat tube to warm up. As the bin thermostat tube senses a warm temperature which causes the bin thermostat to switch back to its “open” position, the ice machine starts to make ice.

The setting of bin thermostat can be adjusted by turning the dial on the top of thermostat to “CW” to cold position or to “CCW” to warm position. In the mid-range position the bin thermostat will close at about 42°F.

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